

**NEAR-NET-SHAPE POLYMERIZATION PROCESS AND
MATERIALS SUITABLE FOR USE THEREWITH**

5 ABSTRACT

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This invention is directed to a processing approach for the rapid and efficient in-situ polymerization of specially prepared precursor mixtures to achieve near-net-shape production of objects/articles with exact dimensions. The process relies on the use of polymerizable compositions comprised of a mixture of a dead polymer, a reactive plasticizer and, optionally, an initiator, which compositions are semi-solid-like prior to curing and induce low shrinkage upon curing as a result of their partially polymerized nature prior to processing. The partially polymerized nature of the precursor mixtures also allows extremely impact-resistant objects/articles to be fabricated. Other desirable engineering property attributes can similarly be achieved via the judicious blending of starting ingredients in formulating the polymerizable (curable) mixtures.